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MEMO TO EDITORS

In this month's IDRC Features, articles from Africa, Asia and Latin America, covering development topics from aquaculture to economics.

- From Colombia, sociologist Jacqueline Ashby reports on a project that aims to turn Latin America's abundant supplies of phosphate rock into a source of cheap, efficient fertilizer to improve production from the region's acid soils.

- In Singapore, journalist Paul Icamina finds out why where is a sudden rush of interest in mussels. The city state's researchers, he reports, have discovered that you can get more protein from mussel farming than from fishing.

- Africa receives only 2 percent of the world's tourists, but the number is growing. Senegalese journalist Momar Kébé Ndiaye reports that Africa is going after a bigger share of the tourist industry - and asks who will benefit.

- Science World is our regular monthly column of science news briefs. This month, a report on naturally occurring food poisons called mycotoxins, on a study to find new ways to make bamboo last longer, and on an award-winning clay pot that cleans water without even stirring.

IDRC Features are articles by reputable writers from around the world, dealing with topics related to science and technology for development in a popular style. The service is published 10 times a year by the Communications Division of the International Development Research Centre, and distributed free of charge, primarily to news media in Third World countries.

No fee is charged for the use of any of this material, but editors are requested to send one clipping of each article used to IDRC. Your comments and suggestions would also be appreciated.

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THESE ROCKS CAN INCREASE FOOD SUPPLY

by Jacqueline A. Ashby

A combined research effort by three international agencies is promising better crops for smallholders in Latin America who must try to make a living from farming on poor soils. The promise lies in the rocks that are often all around them.

Five years ago, the US-based International Fertilizer Development Centre (IFDC) and the International Centre for Tropical Agriculture (CIAT), in Colombia, with financial backing from Canada's International Development Research Centre (IDRC), began studying rock phosphates. Their aim was to develop a phosphate strategy for the acidic, infertile soils of tropical Latin America.

The timing seemed to be right for such a study. Growth in agricultural output in the Latin American countries in the past two decades has depended to a large extent on increased use of fertilizer. In Colombia, for example, consumption of phosphate fertilizer increased about 300 percent in that period. Fertilizer prices were high, and projected to be higher. An estimated one thousand million hectares of potentially valuable land in Latin America are deficient in phosphorus.

At the same time, new rock phosphate deposits for exploitation were being discovered, including some 20 deposits in several countries of Latin America. The potentially lower price of locally-produced phosphate

rock fertilizer would expand the possibilities for increased food production on phosphorus-deficient soils.

Since many staple foods in Latin America are produced on small farms, and almost all Latin American countries are net importers of food staples, the availability of inexpensive fertilizers should benefit both small-scale producers and urban consumers.

The usefulness of rock phosphates is not limited to Latin America, according the Dr William D. Bishop, director of IFDC's Agro-Economics Division. "Essentially, anywhere you have high rainfall conditions, where leaching of the soil has taken place over time... soils tend to become acidic and infertile, and there rock phosphate has great potential for restoring a measure of fertility at low cost," he says. But he adds, "If you are looking at the importance of a particular nutrient to production in a region, then phosphorus in Latin America is an absolute must. It's critical."

While direct application of finely ground phosphate rock has been practiced for years in many countries, little was known in 1977 about the suitability of phosphate-containing rocks located in Latin America. And if rock phosphate is to be a benefit, all the factors have to be taken into consideration, says Dr Bishop.

"You have to know what the phosphorus content of the local rock is. You need to know what crops you will be applying it on, under what sort of soil conditions you are working. And you have to know what crop response there will be, because if the crop doesn't respond well to the particular type of phosphate, I don't care if rock phosphate is cheaper, it's still not a good buy for the farmer."

The effectiveness of phosphate rock as a fertilizer varies according to the degree of solubility of the part of the rock containing the phosphorus.

Phosphate rocks from the various newly discovered deposits in Latin America vary in composition. Some are more soluble than others. The first tasks of the researchers were to determine the solubility of the various rock samples, and to see how each one reacts in different types of soil.

Most of the phosphate fertilizers used today are derived from phosphate rock, but are expensive because of the costly commerical processes that are used to increase solubility. Dramatic yield increases are common with most crops when more soluble forms of conventional phosphate fertilizer are used. The project's research on various soil types has also shown promising results with the use of finely ground phosphate rock for a number of soil-crop combinations, using a total of 12 different rock sources in Latin America.

Commercially processed fertilizers make large amounts of phosphorous available to the plant over the short term, but because of the continuous process of dissolving in the soil, the phosphate rock provides an excellent source of long-term available phosphorous. This is especially important for pasture production, and phosphate rock can now be recommended without reservation for upgrading vast areas of low-quality grazing land in Latin America.

The research also showed that phosphate rock is effective on many acid soils for crops with a higher phosphorous requirement, such as beans, cassava, and rice. Fertilization of annual crops with relatively high rates of phosphate rock could even be followed by establishment of pasture grasses to use the residual phosphorous without a re-application.

But some additional questions must be answered in order to transfer these promising experimental-station results to national extension programmes and to farmers.

How effective will phosphate rock fertilizers be under the everyday constraints faced by the farmers. Substitution of phosphate rock products for conventional phosphorous fertilizers, mixtures of the two, or modified phosphate ores, are expected to reduce costs, but the economic information that fertilizer producers and farmers need to choose from these possibilities is not yet available. Farmers may also have to change their customary methods of handling and applying fertilizer when they use phosphate rock, and the impact of such changes has still to be evaluated.

Once the researchers have addressed these questions, it will be possible to make recommendations to fertilizer producers, to national extension programmes, and to farmers about how they can best realize the agronomic potential that the project's research has identified for new phosphate rock products.

"One of the things we expect from a cheap, local, effective source of phosphate is an increased demand for the fertilizer," says Dr. Bishop. "And from that demand and increased use you would create an increased supply of food."

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